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Characterization of Jamun (*Syzygium cumini* Skeels.) genotypes for physical parameters

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Abstract
An evaluation study was conducted on jamun genotypes at Regional Horticultural Research Station, College of Horticulture, Bengaluru during the year 2017 to 2020. There were fourteen genotypes and the results indicated that genotype Dhupdal showed maximum fruit length (3.47 cm), fruit breadth (2.47cm), fruit size (8.57 cm^2), seed length (2.44 cm), the genotype GKVK-1 showed highest seed breadth (1.10 cm), fresh seed weight (2.71 gm), dry seed weight (1.81 gm), the genotype Bahadoli registered maximum fruit weight (15.44 gm), pulp weight (13.23 gm), pulp content (89.18%) and pulp-seed ratio (8.24%) was found highest in the genotype AJG-85.

Keywords: Jamun, *Syzygium cumini*, characterization, jamun genotypes, physical parameters

Introduction
Jamun fruit is botanically called *Syzygium cumini* Skeels, belongs to the family Myrtaceae. It is a multipurpose tree of both food and medicinal values. Fruits are used for table purpose and for the preparation of different variety of products. Jamun is underutilized tropical fruit crop, it is gaining more popularity due to its diversified health benefits especially anti-diabetic and against cardiovascular diseases. The crop is not grown as a sole crop, but several genotypes, varieties and cultivars exhibiting different size, shape, taste, colour and flavour due to varying chemical composition. Tree is evergreen and grows tall, long lived and also has got ornamental value; Inflorescences are borne in leaf axils of panicles. Flowers are light yellow in colour and are bisexual. It is a cross pollinated crop. Fruits are oblong and round in shape, deep purple or bluish, juicy with sweet pulp and has single seed. All parts of the tree such as fruits, leaves, seeds, and bark are used in Indian medicine system like Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH) etc. Different parts of the jamun were also reported for antioxidant, anti-inflammatory, anti-microbial, anti-diarrheal, gastro protective and anti-ulcerogenic properties. Before the discovery of insulin, in the treatment of diabetes jamun was used either alone or in combination with other hypoglycemic plants.

There is lack of research on characterizing the different cultivars for physico-chemical attributes especially, nutritive value is of great significance. The findings of the research would serve as a base for promoting a particular cultivar/variety for commercial cultivation. Further, due to seasonality of the fruit, lot of produce enters into the market that reduces the demand and price hence; there is a great scope to convert the fresh into processed form. During processing of fruit, seeds can be utilized for production of various by-products. Physico-chemical profiling of jamun genotypes is very limited. The present research is focused to the profiling of jamun for its physico-chemical attributes for genotypes. With this background the present investigation entitled "Physico-chemical profiling of jamun (*Syzygium cumini* Skeels.) Genotypes" was undertaken.

Material and Methods
An investigation was done on the "Physico-chemical profiling of jamun (*Syzygium cumini* Skeels.) Genotypes" during 2017-20. The jamun genotypes planted at Regional Horticultural Research and Extension Centre (RHREC), Bengaluru at UHS Campus, GKVK were used for profiling. The experiment site is located at an altitude of 924 meters above Mean sea level with 130.05'N latitude and 770.33' E longitude. The fruits were collected from jamun genotypes were collected from RHREC, Bengaluru.

Fruits were sorted to select clean, evenly matured which are free from injuries, pest and disease for further physico chemical analysis. Fourteen jamun genotypes were selected from experimental block of RHREC, College of Horticulture, UHS Campus, GKVK, Bengaluru. The details are depicted in Table 1.

No. of treatments/genotypes: 14 No. of replications: 03

No. of seasons: 02

Table 1: Jamun genotypes maintained at RHREC, Bengaluru

Sl. No	Genotypes
1	Mysore
2	Chintamani
3	Bahadoli
4	Sl. No. 58
5	K-45
6	Sl. No. 20
7	AJG-85
8	Hogalgere
9	Hadonahalli
10	Kalahalli
11	GKVK-1
12	GKVK-2
13	Dhupdal
14	Krishnagiri

All the jamun genotypes were evaluated for various physico-chemical parameters. Guidelines for the conduct of test for Distinctiveness, Uniformity and Stability (DUS Test) on jamun (*Syzygium cumini* Skeels.) given in Protection of Plant Varieties and Farmers Rights Authority, Government of India, New Delhi was followed. Mature fruits were harvested and observations were taken with minimum fruit samples of 10 numbers.

Physical parameters Tree growth habit

According to DUS guidelines and plants were categorized based on tree growth habit into upright, semi spreading and spreading (Fig. 1).

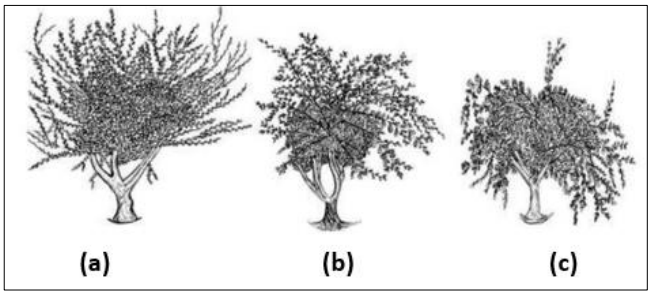

Fig 1: Tree growth habit: upright (a), semi spreading (b) and spreading (c).

Tree foliage type

According to DUS guidelines, foliage type was categorized as sparse and dense.

Mature fruit colour

Fruit colour was determined using Lovibond colour meter (Lovibond RT300, Portable spectrophotometer, The Tintometer Limited, Salisbury, UK) and also examined by visual matching of the fruit with the Royal Horticultural Society (RHS) Color chart.

Mature fruit shape

Matured fruit shape was observed and categorized into four groups namely round, oblong, oval and ellipsoid as per DUS guidelines (Fig. 2).

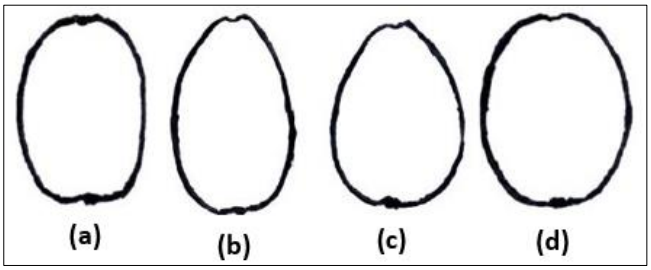

Fig 2: Mature fruit shape Oblong (a), Elliptic (b), Ovoid (c) and Round (d)

Mature fruit apex

Matured fruit apex was categorized into three groups namely flat, depressed and round as per DUS guidelines (Fig. 3).

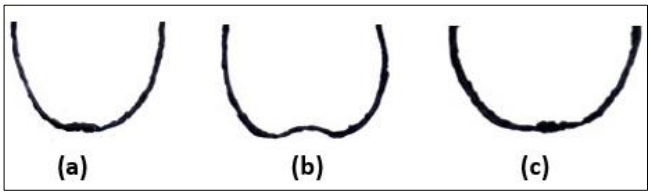

Fig 3: Mature fruit apex flat (a), depressed (b), and round (c).

Mature fruit stalk end

Matured fruit stalk end was categorized into three groups namely flat, depressed and nipple shaped as per DUS guidelines (Fig. 4).

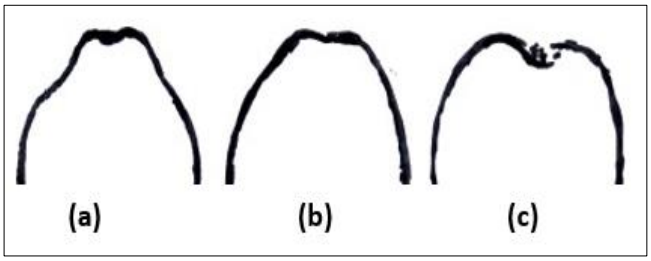

Fig 4: Mature fruit stalk end Nipple shape (a), flat (b), and depressed (c).

Ripe fruit weight (g)

Ten randomly selected jamun fruits were selected and weighed in an electronic weighing balance and the values were recorded in grams.

Ripe fruit length (cm)

The ripe fruit length of ten selected jamun fruits were measured from tip to the bottom of the fruit by using digital vernier caliper gauge and average of ten was expressed in centimeter (cm).

Ripe fruit breadth (cm)

The ripe fruit breadth of ten selected jamun fruits were noted at the centre point where the breadth was maximum using digital vernier caliper gauge and average of those ten fruits was expressed in centimeter (cm).

Ripe fruit size (cm^2): The fruit size was measured by calculating ripe fruit length and fruit breadth of ten randomly selected fruits and denoted as square cm or cm^2.

Pulp content (%)
The amount of pulp recovered from ten fruits was subtracted from fresh weight of those ten fresh fruit weight (g) and is calculated using the formula given below and is expressed as per cent (%).

$$\text{Pulp content (\%)} = \frac{\text{Fresh weight of the fruit (g)} - \text{Pulp weight of the fruit (g)}}{\text{Fresh weight of the fruit (g)}} \times 100$$

Fresh seed weight (g)
The seeds obtained after crushing of ten randomly selected jamun fruits were weighed in an electronic weighing balance and values were noted in grams.

Dry seed weight (g): The weight of the seeds obtained after calculating fresh seed weight (g) were dried (air dry) and weighed in an electronic weighing balance and the values were recorded in grams.

Seed length (cm): The distance between the base and the apex of ten selected seeds were measured and the average was conveyed in centimeter (cm).

Seed breadth (cm): Breadth of ten selected seeds was measured around the midpoint where breadth was maximum and the average was stated in centimeter (cm) using vernier calipers.

Pulp: Seed ratio: Pulp and seed weight were recorded for each selected sample and pulp to seed ratio was worked out using the formula;

$$\text{Pulp: seed ratio} = \frac{\text{Weight of the pulp (g)}}{\text{Weight of the seed (g)}}$$

The data pertaining to the morphological characters were analysed by ward's minimum variance method using SAS software (version 9.8). Similarity matrix was computed and the dendrogram was constructed accordingly (Rencher, 2002).

Results and Discussion

Physical parameters

Observations on physical attributes *viz*., growth habit, foliage type, fruit and seed characters were analysed and depicted in Table 2. Clusterwise grouping of jamun genotypes according to physical attributes are given in (Table 3). Clustering of genotypes was done by Tocher's method and dendrogram was generated for physical attributes (Fig. 5).

Growth habit

As per jamun DUS guidelines, plant showed two types of spreading nature, *i.e*. spreading and upright. The genotypes, GKVK-2, Hadonahalli, Hogalgere, Kalahalli and Krishnagiri showed spreading type of growth habit. While, genotypes AJG-85, Bahadoli, Chintamani, Dhupdal, GKVK- 1, K-45, Mysore, Sl.No. 20, Sl.No. 58 recorded upright type of growth habit (Table 2). The jamun genotypes grouped under spreading type were GKVK-2, Hadonahalli, Hogalgere, Kalahalli and Krishnagiri and genotypes AJG-85, Bahadoli, Chintamani, Dhupdal, GKVK-1, K-45, Mysore, Sl. No. 20, Sl. No. 58 showed upright type of growth habit. Similar studies were reported by Kumar *et al*. (2019) [3] in diversity studies of jamun genotypes; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun (*Syzygium cumini* Skeels.) for fruit characters; Prabhuraj *et al*. (2002) [4] in variability in morphological characteristics of jamun.

Table 2: Variability of jamun genotypes for physical attributes

Genotypes	Growth habit	Tree foliage type	Mature fruit colour	Mature fruit shape	Mature fruit apex	Mature fruit stalk end	Mature fruit pulp colour
AJG-85	Upright	Dense	Purple Black	Oblong	Depressed	Depressed	Purple white
Bahadoli	Upright	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white
Chintamani	Upright	Dense	Purple Black	Oblong	Depressed	Depressed	Purple white
Dhupdal	Upright	Dense	Purple Black	Ovoid	Depressed	Flat	Purple white
GKVK-1	Upright	Dense	Purple Black	Ovoid	Depressed	Nipple shape	Purple white
GKVK-2	Spreading	Dense	Purple Black	Elliptic	Flat	Nipple shape	Purple white
Hadonahalli	Spreading	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white
Hogalgere	Spreading	Dense	Purple Black	Oblong	Depressed	Depressed	Purple white
K-45	Upright	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white
Kalahalli	Spreading	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white
Krishnagiri	Spreading	Dense	Purple Black	Oblong	Depressed	Flat	Purple white
Mysore	Upright	Dense	Purple Black	Ovoid	Depressed	Nipple shape	Purple white
Sl. No. 20	Upright	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white
Sl. No. 58	Upright	Sparse	Purple Black	Oblong	Depressed	Depressed	Purple white

Tree foliage type

In jamun genotypes, two types of tree foliage were observed *viz*., sparse and dense foliage. The genotypes which showed sparse foliage type are Bahadoli, Sl. No. 58, K-45, Sl. No. 20, Hadonahalli and Kalahalli. The genotypes which are grouped as dense foliage type are Mysore, Chintamani, AJG-85, Hogalgere, Krishnagiri, GKVK-1, GKVK-2 and Dhupdal (Table 2). Similar results were observed in the studies conducted by Kumar *et al*. (2019) [3] in diversity studies of jamun genotypes; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Matured fruit and pulp color

All the fourteen jamun genotypes noted purple black colour fruits and purple white coloured pulp (Table 2).

Matured fruit shape

Among fourteen jamun genotypes, AJG-85, Bahadoli,

Chintamani, Hadonahalli, Hogalgere, K-45, Kalahalli, Krishnagiri, Sl. No. 20 and Sl. No. 58 had recorded oblong-shaped fruits. Jamun genotypes such as Dhupdal, GKVK-1, and Mysore were ovoid-shaped and jamun genotype GKVK - 2 noted elliptical-shaped fruits (Table 2).

Mature fruit apex

Among fourteen jamun genotypes, GKVK-2 had flat apex whereas, all other genotypes had depressed fruit apex (Table 2).

Matured fruit stalk end

Among fourteen jamun genotypes, mature fruit stalk end of AJG-85, Bahadoli, Chintamani, Hadonahalli, Hogalgere, K-45, Kalahalli, Sl. No. 20 and Sl. No. 58 had depressed stalk end whereas, genotypes Dhupdal and Krishnagiri observed flat stalk end and the genotypes GKVK-1, GKVK-2, and Mysore had nipple shaped fruit stalk end (Table 2).

Fruit weight (g)

The fruit weight was significantly varied among fourteen jamun genotypes (Table 3). The genotype Bahadoli recorded higher fruit weight (15.44 g) whereas, the lower fruit weight was found in GKVK-2 (8.19 g).

The mean cluster value for fruit length ranged from 9.99 g to 13.15 g (Table 4). The cluster- II recorded lower value of 9.99 g and cluster-V showed higher value of 13.15 g. Fruit weight contributed 40 per cent among jamun genotypes (Fig. 5). Higher fruit weight is a preferred as a character for selecting superior genotypes. Fruit weight is a dependent character which is governed by many factors, *viz*., fruit length, breadth, volume, size, pulp weight, pulp per cent, pulp thickness, pulp to seed ratio, seed length, breadth, volume, size, weight and seed per cent (Devi *et al*., 2016) [1].

Fruit length (cm)

Jamun genotypes indicated (Table 3) significant variation in fruit length. The genotype Dhupdal noted higher fruit length (3.47 cm) whereas, lower fruit length was observed in the genotype No. 58 (2.89 cm). The mean cluster value for fruit length ranged from 2.99 cm to 3.29 cm. The cluster-II recorded lower value of 2.99 cm and cluster-III and cluster-V showed higher value of 3.29 cm (Table 4). There is 12 per cent contribution of jamun genotypes for fruit length towards divergence (Fig. 5). Similar observations on fruit length were reported by Shahnawaz and sheikh (2011) [5] and stated that length and diameter of fruit are two important factors which decide whether fruit is completely grown and ready to harvest.

Fruit breadth (cm)

The fruit breadth (Table 3) varied significantly among fourteen jamun genotypes. The genotype Dhupdal showed maximum fruit breadth (2.47 cm) and minimum fruit breadth was observed in GKVK-2(1.85 cm). The cluster-wise mean value of fruit breadth ranged from 2.05 cm to 2.34 cm. The cluster-II had lower fruit breadth of 2.05 cm and the cluster-V recorded higher fruit breadth of 2.34 cm (Table 4). Similar results for fruit breadth was also reported by Srimathi *et al*. (2001) [6] on fruit and seed quality characters in jamun; Inamdar *et al*. (2002) [2] in correlation and path analysis studies in jamun.

Table 3: Variability of jamun genotypes for fruit attributes

Genotypes	FL (cm)	FB (cm)	FS (cm^2)	SL (cm)	SB (cm)	FW (gm)	PW (gm)	PC (%)	FSW (gm)	PSR	DSW (gm)
AJG-85	3.12	2.29	7.16	2.06	0.85	13.02	11.61	89.18	1.41	8.24	1.09
Bahadoli	3.38	2.32	7.86	1.82	0.95	15.44	13.23	85.69	2.21	5.99	1.71
Chintamani	3.14	2.39	7.53	1.99	0.99	11.81	10.20	86.39	1.61	6.35	1.31
Dhupdal	3.47	2.47	8.57	2.44	0.96	14.10	11.94	84.65	2.17	5.51	1.51
GKVK-1	3.23	2.30	7.46	2.41	1.10	11.35	8.64	76.14	2.71	3.19	1.81
GKVK-2	2.93	1.85	5.43	2.24	1.04	8.19	6.18	75.42	2.01	3.07	1.64
Hadonahalli	3.21	2.29	7.39	2.13	0.95	11.97	10.33	86.23	1.65	6.26	1.15
Hogalgere	3.29	2.37	7.84	2.26	1.03	13.23	11.28	85.26	1.95	5.78	1.46
K-45	3.05	2.43	7.42	2.10	0.96	12.07	10.39	86.10	1.68	6.19	1.16
Kalahalli	3.24	2.24	7.28	2.44	0.95	12.26	10.03	81.82	2.23	4.50	1.50
Krishnagiri	3.24	2.24	7.25	2.22	0.93	11.65	10.04	86.19	1.61	6.24	1.22
Mysore	3.21	2.07	6.65	2.39	1.09	11.38	9.16	80.50	2.22	4.13	1.71
Sl. No. 20	3.29	2.30	7.57	2.31	0.94	12.95	11.06	85.44	1.89	5.87	1.23
Sl. No. 58	2.89	2.34	6.78	1.86	0.98	10.99	8.83	80.34	2.16	4.09	1.19
Mean	3.19	2.28	7.30	2.19	0.98	12.17	10.21	83.52	1.96	5.39	1.41
Std. Dev.	0.16	0.16	0.71	0.21	0.07	1.66	1.71	4.08	0.35	1.42	0.25
C.V.	0.05	0.07	0.10	0.09	0.07	0.14	0.17	0.05	0.18	0.26	0.17
S.E.	0.04	0.04	0.19	0.06	0.02	0.44	0.46	1.09	0.09	0.38	0.07
C.D. 5%	0.09	0.09	0.41	0.12	0.04	0.96	0.98	2.35	0.20	0.82	0.14
C.D. 1%	0.13	0.12	0.57	0.17	0.05	1.34	1.37	3.28	0.28	1.14	0.20
Range Lowest	2.89	1.85	5.43	1.82	0.85	8.19	6.18	75.42	1.41	3.07	1.09
Range Highest	3.47	2.47	8.57	2.44	1.10	15.44	13.23	89.18	2.71	8.24	1.81

Note: FL: Fruit length (cm), FB: Fruit breadth (cm), FS: Fruit size (cm^2), FW: Fruit weight (g), PW: Pulp weight (g), PC: Pulp content (%), SL: Seed length (cm), SB: Seed breadth (cm), FSW: Fresh seed weight (g), DSW: Dry seed weight (g), PSR: Pulp - seed ratio

Table 4: Clusterwise summary mean of physical attributes of jamun fruit

Parameters	Cluster-I	Cluster-II	Cluster-III	Cluster-IV	Cluster-V
Fruit Length (cm)	3.23	2.99	3.29	3.16	3.29
Fruit Breadth (cm)	2.31	2.05	2.28	2.18	2.34
Fruit Size (cm^2)	7.48	6.16	7.52	6.91	7.75
Seed Length (cm)	2.2	2.16	1.99	2.43	2.16
Seed Breadth (cm)	0.99	1.01	0.99	1.07	0.91
Fruit Weight (g)	11.74	9.99	13	11.44	13.15
Pulp Weight (g)	10.17	8.1	11.05	8.79	12
Pulp Content (%)	84.18	76.95	83.71	77.89	86.73
Fresh Seed Weight (g)	1.79	1.98	1.88	2.12	1.61
Pulp to Seed Ratio	5.91	3.94	5.56	3.85	6.63
Dry Seed Weight (g)	1.38	1.63	1.5	1.71	1.24

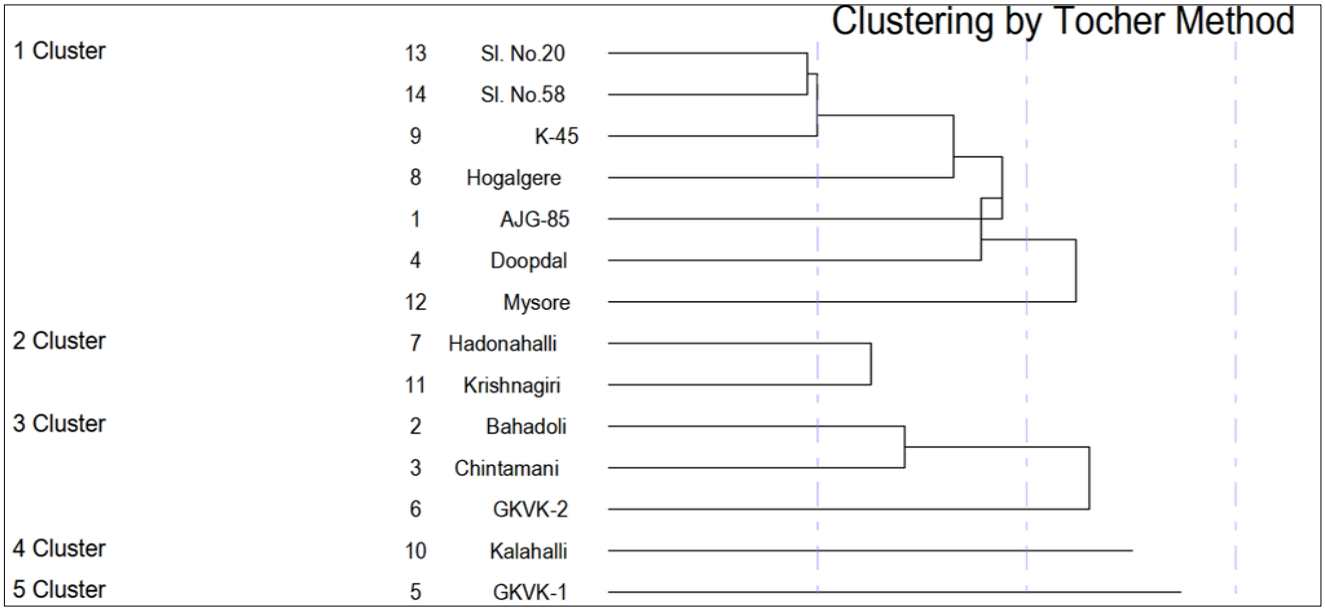

Fig 5: Dendrogram of different jamun genotypes for physical attributes

Fruit size (cm^2)

The fruit size (Table 3) varied significantly among different jamun genotypes. The genotype Dhupdal noted the maximum fruit size (8.57 cm^2) and minimum fruit breadth was observed in genotype GKVK -2 (1.85 cm^2). The cluster wise mean value of fruit size observed were ranged from 6.16 cm^2 to 7.75 cm^2. Cluster-V recorded higher value (7.75 cm^2) and cluster-II showed lower mean value of 6.16 cm^2 (Table 4) and fruit size showed 12 per cent contribution within among jamun genotypes (Fig. 5). The probable reason behind such variation in fruit size may be climatic variation like frequency of rainfall as well as genetic constitution of the tree (Srivastava *et al.*, 2012) [7].

Pulp weight (g)

The pulp weight showed significant differences among fourteen jamun genotypes (Table 3). The genotype Bahadoli noted higher pulp weight (13.23 g) and genotype GKVK- 2 noted as lower pulp weight (6.18 g). The cluster-wise mean value of pulp content ranged from 8.1 g to 12 g. The cluster-II recorded low pulp weight of 8.1 g and cluster-V noted the higher value of 12 g of pulp weight (Table 4). Pulp weight contributed 9 per cent variation among different jamun genotypes (Fig. 5). Similar studies on jamun genotypes were reported by Srimathi *et al.* (2001) [6] on fruit and seed quality characters in jamun; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Pulp content (%)

The pulp content showed significant differences among fourteen jamun genotypes. The genotype AJG- 85 noted higher pulp content (89.18%) and genotype GKVK- 2 noted as lower pulp content (75.42%) (Table 3). The Clusterwise mean value of pulp content ranged from 76.95 per cent to 86.73 per cent. The cluster-II noted lower pulp content 76.95 per cent and cluster-V noted the higher value of 86.73 per cent (Table 4). Similar studies were conducted by Srimathi *et al.* (2001) [6] on fruit and seed quality characters in jamun; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Pulp-seed ratio

The pulp to seed ratio presented significant differences among the genotypes. The genotype AJG-85 showed higher pulp to seed ratio of 8.24 whereas, lower ratio was noticed in GKVK-2 genotype (3.07) (Table 3). The clusterwise mean value of pulp to seed ratio ranged from 3.85 to 6.63. The cluster-IV noted lower value of pulp-seed ratio 3.85 and the cluster-V noted the higher value of 6.63 (Table 4). Similar studies were conducted by Srimathi *et al.* (2001) [6] on fruit and seed quality characters in jamun; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Seed length (cm)

Among fourteen jamun genotypes, Dhupdal and Kalahalli

showed higher seed length (2.44 cm) and lower seed length (1.82 cm) was observed in the genotype Bahadoli (Table 3). The clusterwise mean value of seed length ranged from 1.99 cm to 2.43 cm. The cluster-III recorded lower value of seed length 1.99 cm and cluster-IV noted higher value of 2.43 cm (Table 4). Seed length contributed 16 per cent variation among fourteen jamun genotypes (Fig. 5). Interpretation of similar studies was carried out by Srimathi *et al*. (2001) [6] on fruit and seed quality characters in jamun; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Seed breadth (cm)

The genotype GKVK-1 noted higher seed breadth (1.10 cm) whereas, lower seed breadth of 0.85 cm was noticed in genotype AJG-85 (Table 3). The clusterwise mean value of seed breadth ranged from 0.91 cm to 1.07 cm. The cluster-IV noticed higher mean value (1.07 cm) and cluster-V recorded lower mean value (0.91 cm) depicted in Table 4. Similar results were reported by Kumar *et al*. (2019) [3] in diversity studies of jamun genotypes; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun

Fresh seed weight (g)

There was significant difference among fourteen jamun genotypes. The genotype GKVK-1 noted the maximum fresh seed weight (2.71 g), The minimum fresh seed weight was noted in the AJG-85 of 1.41 g (Table 3). The clusterwise mean value of fresh seed weight ranged from 1.61 g to 2.12 g. The cluster-V noted lower value of 1.61 g and cluster-IV noted the higher value of pulp weight 2.12 g (Table 4). Seed weight contributed 2 percent variation in physical parameters of different jamun genotypes towards divergence (Fig. 5). Srimathi *et al*. (2001) [6] concluded that good and viable seeds always have higher sinks. Hence seed weight can be taken as one of the criteria for selecting superior genotypes. The genotypes with higher seed weight may be selected from medicinal point of view and also in other food by products. Similar results were interpreted by Kumar *et al*. (2019) [3] in diversity studies of jamun genotypes

Dry seed weight (g)

The genotype GKVK- 1 revealed higher dry seed weight (1.81 g) and lower (1.09g) was noticed in genotype AJG-85 (Table 3). The clusterwise mean value of dry seed weight ranged from 1.24 g to 1.71 g. The cluster-V recorded lower mean value of 1.24 g and cluster-IV observed higher mean value 1.71 g (Table 4). Similar results were reported by Kumar *et al*. (2019) [3] in diversity studies of jamun genotypes; Inamdar *et al.* (2002) [2] in correlation and path analysis studies in jamun.

Conclusion

Jamun is having high medicinal value and has greater potential in nutraceutical and pharmaceutical industries. Jamun pulp and seeds possess phytochemicals like anthocyanins, phenols, etc. have beneficial effects on treatment of diabetes. The reach and consumption of the fresh fruits to the population is low because of localized production and short shelf life. Therefore, genotypes evaluated at RHREC, Bengaluru posses different variability and further can be used for processing also.

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